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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor: GEAGHAN, BERNARD O.
Application No.: 10/052695 Group Art Unit: 2673
Filed: January 18, 2002 Examiner: LEFLORE, Laurel E.
Title: TOUCH SCREEN WITH SELECTIVE TOUCH SOURCES

BRIEF ON APPEAL

CERTIFICATE OF MAILING OR TRANSMISSION [37 CFR § 1.8(a)]

I hereby certify that this correspondence is being:

- deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.
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11-10-04

Date

Heather M. Bundy

Signed by: Heather M. Bundy

Dear Sir:

This is an appeal from the Office Action mailed on May 18, 2004. The fee required under 37 CFR § 41.20(b)(2) for the appeal should be charged to Deposit Account No. 13-3723.

REAL PARTY IN INTEREST

3M Company, a Delaware Corporation, and 3M Innovative Properties Company, a Delaware Corporation, are the real parties in interest.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

STATUS OF CLAIMS

Claims 19, 20 and 22-36, reproduced in the Claim Appendix, stand finally rejected and are being appealed.

STATUS OF AMENDMENTS

All claim amendments have been entered.

SUMMARY OF CLAIMED SUBJECT MATTER

The present invention provides a touch sensor system and method of detecting a touch input on a touch sensor. A user contact point is driven with a signal that can be transferred to the touch sensor through the user when the user touches the touch sensor. The transferred signal is used to determine the touch position or other information related to the touch input. Sensing a touch on a touch sensor using a signal driven by a user contact point and transferred to the touch sensor via the touch can provide benefits such as enhanced system performance, the ability to use a capacitive touch sensor on a mobile device that is not permanently grounded, and the ability to resolve multiple simultaneous touches from multiple users, even on analog capacitive touch screens that do not use antenna arrays or grid sensors.

Independent claim 19 recites that switches can be associated with the user contact point and the touch sensor, and that the switches are connected to a power source. The switches can allow various modes of detection based on the states of the switches.

Independent claim 30 recites a method that includes driving the first contact point with a first signal, the first contact point being separate from the touch sensor and being associated with a first contact switch, detecting the first signal transferred to the touch sensor through a touch on the touch sensor based on the states of the touch sensor switch and the first contact switch, and determining information relating to the touch using the transferred first signal.

Independent claim 36 recites that the touch sensor and the user contact switch can be contained within the same housing.

GROUNDS OF REJECTION

Claims 19, 20 and 22-36 stand finally rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pat. No. 6,498,590 (Dietz) in view of U.S. Pat. No. 5,815,141 (Phares).

APPELLANTS' ARGUMENTS

Appellants contend that the Examiner has failed to make a *prima facie* case of obviousness in the proposed combination of Dietz and Phares. There is no suggestion or motivation to combine the teachings of the applied references, and the proposed combination does not teach or suggest all the elements of Appellants' claims. A *prima facie* case of obviousness cannot be made without meeting the following conditions: (1) there is a suggestion or motivation to modify or combine the teachings of the applied references; (2) there is a reasonable expectation of success; and (3) the combination of references teaches or suggests all the claim limitations. In the present case, there is no motivation to make the proposed combination. Even so, the proposed combination can be hypothetically considered for what it would fairly teach or suggest if a proper motivation to combine or modify were present, and the results can be compared to the claimed invention. In the present case, such a comparison reveals that the proposed combination does not teach or suggest all the elements of Appellants' claims.

Dietz discloses a multi-user touch system that includes a pattern of antennas that transmit uniquely identifiable signals that can be received by receivers associated with different users, each receiver configured to receive a uniquely identifiable signal. A processor associates a specific antenna with a particular user when multiple users simultaneously touch the antenna array. As such, the receipt of a signal by a receiver associated with a particular user indicates that user is touching the antenna array, and the information associating which antenna is being touched with that user indicates the position of the touch. Dietz alternatively discloses that the antenna array can be used to receive signals rather than transmit signals, but teaches that configurations where the antenna array transmits uniquely identifiable signals is superior (see Dietz, col. 5, lines 44-55).

Appellants disclose and claim touch sensor systems that include a user contact point that is driven with a signal so that when a user contacting the user contact point also touches the touch sensor, the signal driving the user contact point is transferred to the touch sensor. The transferred signal is used to determine information related to the touch, for example touch position, information identifying the user, and so forth. Dietz clearly teaches that systems in which a touch sensor acts as a receiver of signals transferred through a user from a signal driven user contact point is an inferior arrangement, opting for a configuration where an array of antennas transmits uniquely identifiable signals that can be received by a receiver associated with

a particular user. As such, any proposed combination of Dietz with another reference for the purposes of arguing obviousness of Appellants' invention is suspect for lack of motivation due to Dietz's clear teaching of a configuration that differs from Appellants' claimed configuration and that Dietz deems to be superior. In addition, the disclosure of Dietz is deficient with respect to various elements recited in the claims, as indicated in the following discussion. Without curing these deficiencies, a *prima facie* case of obviousness cannot be made.

Appellants' claims 19, 20 and 22-29, through independent claim 19, recite a touch sensor system that includes, "a touch sensor switch electrically connected to the touch sensor, a first user contact point separate from the touch sensor, ... a first user contact point switch electrically connected to the first user contact point, and a power source electrically connected to the touch sensor switch and the first user contact point switch...." Dietz does not teach or disclose a touch sensor switch electrically connected to the touch sensor, a user contact point switch electrically connected to a user contact point, and a power source electrically connected to the touch sensor switch and the user contact point switch. Appellants teach that the user contact point switch and touch sensor switch can be used to determine the mode of detection, based on the various combinations of on and off states for each switch. Dietz does not recognize or in any way motivate one of skill in the art to consider the benefits of using contact point and sensor switches. For Dietz, it is enough that identification of the touched antenna in the antenna array locates the touch position, and the received unique signal transmitted by the antenna array identifies the user. This can be accomplished for multiple users without the use of switches as taught and claimed by Appellants.

In addition to the distinctions made with respect to claim 19, claim 27 recites that the first user contact point and the touch sensor are mounted in a single touch system housing. As discussed below with respect to claim 36, Dietz does not teach or disclose this feature.

In addition to the distinctions made with respect to claim 19, claim 28 recites that the first user contact point is driven with a guard signal that reduces noise in the system. Dietz does not teach or disclose this feature.

Appellants' claims 30-35, through independent claim 30, recite a method of determining information related to a touch on a touch sensor including, "detecting the first signal transferred to the touch sensor through a touch on the touch sensor based on the states of the touch sensor switch and the first contact switch...," where the touch sensor is associated with the touch sensor

switch and the first contact switch is associated with a first contact point that is driven with the first signal. As discussed, Dietz does not teach or disclose a touch sensor and contact point that are associated with switches, the states of the switches being used to determine whether the signal driving the contact point is transferred to the touch sensor by the touch to determine information related to the touch.

In addition to the distinctions made with respect to claim 30, claim 34 recites that the sensitivity of a capacitive touch sensor is enhanced by completing a circuit that comprises a user, the first contact point, and the touch sensor and that does not include a ground. This feature is not disclosed by Dietz. In the system of Dietz, a completed circuit caused by a touch input will always include ground.

Appellants' independent claim 36 recites a system that includes a touch sensor contained within a housing and a user contact point separate from the touch sensor contained within the same housing, where a touch to the touch sensor transfers a signal from the user contact point to the touch sensor to determine information related to the touch. Dietz does not teach or disclose that the user contact point and the touch sensor are or can be mounted in the same housing. The only items that Dietz identifies as conductive objects suitable for identifying users are conductive chairs, floor mats, wristbands and belts. Each of these items is necessarily separate from the housing that contains the antenna array, and their disclosure would not lead someone of skill in the art to make the claimed invention.

The Phares reference provides no teaching to overcome Dietz's teaching away from Appellants' claimed configuration, nor does Phares cure the deficiencies in the Dietz disclosure required for the combination to disclose all the elements of Appellants' claims.

Phares discloses a resistive touch screen that provides discrimination between objects touching different portions of its surface by subdividing at least one of the two opposing conductive sheets of the touch screen into separated portions. A switch can be used to deactivate any selected portion so that a touch input within such portion provides no signal. A resistive touch screen works by disposing two conductive films in a facing relationship so that in the absence of a touch, the two conductive films are electrically isolated. Under the force of a touch, the two films are brought into local electrical contact that generates a signal that can be used to determine the location of the touch. While Phares discloses subdividing at least one of the two conductive films into separated portions, each portion is still part of the same overall touch

screen. In contrast, Appellants' claims all recite that the user contact point is separate from the touch sensor, not an integral part of it. In addition, neither portion of the touch screen of Phares is driven with a signal that is transferred to the other due to a touch, as is required by Appellants' claims.

Phares does not disclose a user contact point separate from the touch sensor, nor does Phares disclose driving a user contact point with a signal and transferring that signal through a touch on the touch sensor to determine information related to the touch, nor does Phares disclose a user contact point switch and a touch sensor switch connected to a power source. The switch disclosed by Phares is for the purpose of deactivating a selected portion of a resistive touch sensor, and is not taught for the functions disclosed and claimed by Appellants, which include the ability to switch among a number of touch sensing modes and to distinguish touch inputs from different users. In brief, there is nothing in Phares to cure the deficiencies of the Dietz reference discussed above, or to overcome the teachings of Dietz in a manner sufficient to motivate one of skill in the art to modify the system disclosed by Dietz..

CONCLUSION

In view of the above, Appellants assert that the Examiner has failed to make a *prima facie* case of obviousness. The proposed combination is not proper due to lack of motivation, and even if proper the proposed combination does not disclose all the elements of Appellants' claims. Appellants therefore submit that the rejection of claims 19, 20 and 22-36 should be overturned, and respectfully solicit a favorable decision from the Board.

Respectfully submitted,

10 Nov. 2004

Date

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Claims Appendix

19. A system for determining information related to a touch on a touch sensor comprising a touch sensor switch electrically connected to the touch sensor, a first user contact point separate from the touch sensor, the first user contact point driven with a first signal, a first user contact point switch electrically connected to the first user contact point, and a power source electrically connected to the touch sensor switch and the first user contact point switch, wherein the touch on the touch sensor transfers at least a portion of the first signal to the touch sensor, the touch sensor configured to use the transferred first signal to determine information related to the touch on the touch sensor.

20. The system of claim 19, wherein a user touches both the touch sensor and the first user contact point to transfer the first signal.

22. The system of claim 19, wherein the touch sensor switch or the first user contact point switch must be closed in order for the system to determine information related to the touch.

23. The system of claim 19, wherein the information related to the touch includes touch position on the touch sensor.

24. The system of claim 19, further comprising a second user contact point separate from the touch sensor.

25. The system of claim 24, wherein the second contact point is driven with a second signal unique from the first signal.

26. The system of claim 25, wherein the information related to the touch includes identifying whether the first signal or second signal is transferred to the touch sensor.

27. The system of claim 19, wherein the first user contact point and the touch sensor are mounted in a single touch system housing.

28. The system of claim 19, wherein the first user contact point is driven with a guard signal that reduces noise in the system.

29. The system of claim 23, wherein the first user contact point must be touched in order for the touch system to determine the position of a touch to the touch sensor.

30. A method for determining information related to a touch on a touch sensor, the touch sensor associated with a touch sensor switch, the method comprising:

driving a first contact point with a first signal, the first contact point being separate from the touch sensor and being associated with a first contact switch;

detecting the first signal transferred to the touch sensor through a touch on the touch sensor based on the states of the touch sensor switch and the first contact switch; and

determining information relating to the touch using the transferred first signal.

31. The method of claim 30 further comprising driving a second contact point with a second signal.

32. The method of claim 31, wherein a second contact switch is associated with the second contact point, wherein in a first mode the touch sensor switch is closed and the first and second contact switches are open, wherein in a second mode the first contact switch is closed and the touch sensor switch and the second contact switch are open, wherein in a third mode the second contact switch is closed and the touch sensor switch and first contact switch are open, wherein in a fourth mode the first and second contact switches are closed and the touch sensor switch is open, and wherein in a fifth mode the touch sensor switch and the first and second contact switches are closed.

33. The method of claim 31, further comprising the step of discriminating among touch inputs to the touch sensor based on whether the first signal or second signal has been transferred.

34. The method of claim 30, wherein the touch sensor is a capacitive touch sensor and a sensitivity of the touch sensor is enhanced by completing a circuit that comprises a user, the first contact point, and the touch sensor and does not include a ground.

35. The method of claim 30, wherein the information related to the touch comprises the touch position.

36. A system for determining information related to a touch on a touch sensor comprising:

a housing containing the touch sensor; and
a user contact point separate from the touch sensor and contained within the housing, the user contact point driven with a first signal such that the touch on the touch sensor transfers at least a portion of the first signal to the touch sensor, the touch sensor configured to use the transferred first signal to determine information related to the touch on the touch sensor.

Evidence Appendix

No evidence was submitted pursuant to §§ 1.130, 1.131 or 1.132.